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| 10/563,694 | 01/05/2006 | Gerard A Friour | 85717JH | 3006 |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/563,694

Applicant(s)

FRIOUR ET AL.

Examiner

GREGORY CLARK

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/88)
Paper No(s)/Mail Date 01/05/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Double Patenting

Claims 1-14 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-12 and 17-18 of copending Application No. 10563693. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The instant application claims "a mixed aluminum and silicon alkoxide only comprising hydrolyzable functions" and the copending application claims a mixture of hydrolyzable and non- hydrolyzable groups. The use of large numbers of hydrolyzable groups contributes to the inorganic nature, albeit crystalline nature, of the aluminosilicate, the presence of non-hydrolyzable groups such as (alkyl groups) contribute to the organic nature of the structure and would make it less crystalline.

It is common in the art to use aluminum alkoxides or silicon alkoxides with hydrolysable or non- hydrolysable groups and/ or mixtures in order to balance these two properties. It would have been obvious to one having ordinary skill in the art to have used hydrolysable or non-hydrolysable groups and/ or mixtures. The usage of hydrolysable or non- hydrolysable groups is commonly used to control the crosslink density (related to film durability and absorptivity) of the aluminosilicate network whether by exclusively selecting all hydrolysable groups, all non- hydrolysable groups or a mixture of hydrolysable/non- hydrolysable groups. These hydrolysable /non-

hydrolysable groups and the related combination thereof are well known in to the art and would be obvious.

Claims 1-14 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-3, 5-12, 16 and 23-25 of copending Application No. 10521898. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The instant application claims "a mixed aluminum and silicon alkoxide only comprising hydrolyzable functions" and the copending application claims a mixture of hydrolyzable and non- hydrolyzable groups. The use of large numbers of hydrolizable groups contributes to the inorganic nature, albeit crystalline nature, of the aluminosilicate, the presence of non-hydrolizable groups such as (alkyl groups) contribute to the organic nature of the structure and would make it less crystalline.

It is common in the art to use aluminum alkoxides or silicon alkoxides with hydrolysable or non- hydrolysable groups and/ or mixtures in order to balance these two properties. It would have been obvious to one having ordinary skill in the art to have used hydrolysable or non-hydrolysable groups and/ or mixtures. The usage of hydrolysable or non- hydrolysable groups is commonly used to control the crosslink density (related to film durability and absorptivity) of the aluminosilicate network whether by exclusively selecting all hydrolysable groups, all non- hydrolysable groups or a mixture of hydrolysable/non- hydrolysable groups. These hydrolysable /non-

hydrolysable groups and the related combination thereof are well known in to the art and would be obvious.

Claims 1-14 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-11 and 15 and 16 copending Application No. 10578810. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The instant application claims "a mixed aluminum and silicon alkoxide only comprising hydrolyzable functions" and the copending application claims a mixture of hydrolyzable and non-hydrolyzable groups. The use of large numbers of hydrolysable groups contributes to the inorganic nature, albeit crystalline nature, of the aluminosilicate, the presence of non-hydrolyzable groups such as (alkyl groups) contribute to the organic nature of the structure and would make it less crystalline.

It is common in the art to use aluminum alkoxides or silicon alkoxides with hydrolysable or non- hydrolysable groups and/ or mixtures in order to balance these two properties. It would have been obvious to one having ordinary skill in the art to have used hydrolysable or non-hydrolysable groups and/ or mixtures. The usage of hydrolysable or non- hydrolysable groups is commonly used to control the crosslink density (related to film durability and absorptivity) of the aluminosilicate network whether by exclusively selecting all hydrolysable groups, all non- hydrolysable groups or a mixture of hydrolysable/non- hydrolysable groups. These hydrolysable /non-

hydrolysable groups and the related combination thereof are well known in to the art and would be obvious.

Claims 1-14 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-12 of copending Application No. 10578205. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The instant application claims "a mixed aluminum and silicon alkoxide only comprising hydrolyzable functions" and the copending application only comprising hydrolyzable functions. The use of large numbers of hydrolyzable groups contributes to the inorganic nature, albeit crystalline nature, of the aluminosilicate, the presence of non-hydrolyzable groups such as (alkyl groups) contribute to the organic nature of the structure and would make it less crystalline.

It is common in the art to use aluminum alkoxides or silicon alkoxides with hydrolysable or non- hydrolysable groups and/ or mixtures in order to balance these two properties. It would have been obvious to one having ordinary skill in the art to have used hydrolysable or non-hydrolysable groups and/ or mixtures. The usage of hydrolysable or non- hydrolysable groups is commonly used to control the crosslink density (related to film durability and absorptivity) of the aluminosilicate network whether by exclusively selecting all hydrolysable groups, all non- hydrolysable groups or a mixture of hydrolysable/non- hydrolysable groups. These hydrolysable /non-hydrolysable groups and the related combination thereof are well known in to the art and would be obvious.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poncelet (WO/2004/009368).

Regarding Claim 1, Poncelet teaches an ink jet element containing a support and at least one ink-receiving layer, said ink-receiving layer comprising at least one hydrosoluble binder and at least one aluminosilicate polymer obtainable by a preparation method consisting in treating an aluminum halide with a mixture of at least one silicon alkoxide only having hydrolyzable substituents and at least one silicon alkoxide having a non-hydrolyzable substituent, with an aqueous alkali in the presence of silanol groups, the aluminum concentration being maintained less than 0.3 mol/l, the Al/Si molar ratio being maintained between 1 and 3.6 and the alkali/Al molar ratio being maintained between 2.3 and 3; and then stirring the resulting mixture at ambient

temperature in the presence of silanol groups for long enough to form the hybrid aluminosilicate polymer (page 3, lines 13-30; page 4, lines 1-24).

The examiner takes the position that one would be at liberty to use hydrolysable or non-hydrolysable groups and/ or mixtures for the intended application. It would have been a simple matter of selecting the appropriate aluminum or silicon compounds that did not contain alkyl substituents or some other non-hydrolysable group. It would have been obvious to one having ordinary skill in the art to have varied this with a reasonable expectation of success.

Regarding Claims 2-4, Poncelet discloses use of sodium, potassium or lithium hydroxide recording element (page 8, lines 4 and 5) and colloidal silica (page 3, line 4).

Regarding Claims 6 and 7, Poncelet discloses that the hybrid aluminosilicate in the ink receiving layer comprises 5 to 95 percent by weight of the dry state ink receiving layer (page 11, lines 28-30).

Regarding Claim 8, Poncelet discloses the method for preparing the hybrid aluminosilicate (page 7, lines 26-27) involves an aqueous solution of sodium, potassium or lithium hydroxide (page 8, lines 4-5).

Regarding Claims 9 and 10, Poncelet discloses a recording element where in the aluminum concentration is maintained at less than 0.3mol/L (page 3, line 24-25) and the alkali/Al molar ratio is between 2.3 and 3 (page 3, lines 26-27).

Regarding Claim 11, Poncelet discloses a preparation method that comprises treating a mixed aluminum and silicon precursor resulting from the hydrolysis of a mixture of aluminum compounds and silicon compounds only having hydrolyzable substituents and silicon compounds having a non-hydrolyzable substituent is a product form an aqueous alkali (pages 3, lines 21-24) where by the aluminum compound is selected from the group consisting of aluminum salts, aluminum alkoxides and aluminum halogenoalkoxides, at least one compound selected from the group consisting of unmodified silicon alkoxides and chloroalkoxides, at least one compound selected from the group consisting of modified silicon alkoxides and chloroalkoxides. (page 6, lines 10-15).

The examiner takes the position that one would have full liberty to remove silicon compounds having non-hydrolyzable substituents resulting in the hydrolysis of a mixture of aluminum compounds and silicon compounds only having hydrolyzable substituents.

Regarding Claim 12, Poncelet discloses a recording element where the mixed aluminum and silicon compounds are made from a mixture (i) of an aluminum halide and (ii) a mixture with at least one silicon compound having hydrolyzable substituents

and at least one silicon compound having non-hydrolyzable substituents (page 7, lines 1-3).

The examiner takes the position that one would have full liberty to remove silicon compounds having non-hydrolyzable substituents resulting in a mixture (i) of an aluminum halide and (ii) silicon compound having hydrolyzable substituents.

Regarding Claim 13, Poncelet discloses a modified silicon alkoxide can be represented by the formula $R'-Si-(OR)_3$, wherein R represents an alkyl group comprising 1 to 5 carbon atoms R' represents H, F, or a substituted or unsubstituted linear or branched alkyl or alkenyl group, comprising 1 to 8 carbon atoms, (e. g. a methyl, ethyl, n-propyl, n-butyl, 3-chloropropyl group, or a vinyl group), the modified (non-hydrolyzable) silicon alkoxide is methyltriethoxysilane or vinyltriethoxysilane, and, the unmodified (hydrolyzable) silicon alkoxide is tetramethyl or tetraethyl orthosilicate (page 7, lines 4-14).

Regarding Claim 14, Poncelet discloses a recording element where the hydrophilic binder can be gelatin or polyvinyl alcohol (page 5, line 15).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poncelet (WO/2004/009368) as applied to claim 1 above, and further in view of Liu (5958168).

Regarding Claim 5, Poncelet does not disclose the use of calcium or barium carbonate in the ink receiving layer of the ink recording element.

Liu an ink jet recording element where the ink receiving layer may contain calcium carbonate (column 7, line 51).

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teaching of Poncelet and Liu before him or her to modify the ink receiving layer of Poncelet to include calcium carbonate of Liu because Poncelet uses particle and the calcium carbonate taught by Liu could easily incorporated.

The suggestion/motivation for doing so would have been that ink receiving layers taught by Liu imparts improved ink absorption (column 8, line 53-54).

Claims 1-10, and 13-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lui (6548149).

Regarding Claims 1, 9-10, Lui discloses an ink recording element formed on a substrate and including a binder and particles of silica prepared by wet method and/or aluminosilicate agglomerated with each other without binder (abstract). Lui further discloses that the aluminosilicate can be produced by subjecting a mixture containing, as principal components, aluminum alkoxide and silicon hydroxide for a hydrolysis (controlled) procedure, and are a complex product comprising alumina moieties and silica moieties which are closely combined with each other to such an extent that these moieties cannot be isolated from each other. Usually, in the aluminosilicate particles,

the alumina moieties (Al_2O_3) and the silica moieties (SiO_2) are contained in a weight ratio (Al/Si) of 1:4 to 4:1, preferably about 6:2 (column 9, lines 44-53).

Lui teaches the preparation of aluminosilicate and its use in ink receiving layers. The examiner takes the position that Lui demonstrates that the preparation of aluminosilicate is conducted by hydrolysis and results in a specific ratio range relative to Al/Si. One of ordinary skill in the art at the time of the invention would conduct such a synthesis to produce a desired ratio that would be similar to the applicant.

Regarding Claims 2-5, Lui also discloses that the ink receiving layer can contain aluminum oxide, aluminum hydroxide (column 11, lines 22-23), colloidal silica (column 3, line 50), calcium carbonate (column 11, lines 22-23).

Regarding Claims 6-7, Lui discloses that in the ink-receiving there is no limitation to the solid weight ratio of the binder to the silica and/or aluminosilicate pigment particles. Preferably, the binder/pigment ratio is 10:1 to 10:10, more preferably 10:2 to 10:6. If the content of the binder is too high, the resultant ink-receiving layer has a small total volume of pores and thus exhibits unsatisfactory ink absorption.

Lui does not give the exact weight of aluminosilicate in the ink receiving layer-the criteria associated with determining the proper amount is disclosed. The examiner takes the position take Lui shows the awareness in the prior art of the need to add proper amounts of materials to the ink receiving layer by pointing out the unsatisfactory results that can occur when the levels are inappropriate.

Lui discloses the claimed invention except for exact weight of aluminosilicate in the ink receiving layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the amount of aluminosilicate in the ink receiving layer, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284 (CCPA 1954) .

Regarding Claim 8, Lui does not disclose the use of sodium, potassium and lithium hydroxide in the hydrolysis of the aluminum and silicon compounds.

The examiner takes the position the hydrolysis of metal alkoxide compounds is standard in the art and generally conducted under basic condition due to the instability of such material to acidic reaction medium. A person of ordinary skill in the art at the time of the invention would have full range to use a plethora of basic material to affect controlled hydrolysis which would include sodium, potassium or lithium hydroxide.

Regarding Claim 13, Lui discloses the use of tetraethyl orthosilicate in the preparation of aluminosilicate (column 23, lines 12-25).

Regarding Claim 14, Lui discloses polyvinyl alcohol as a binder for the recording media (column 8, line 33).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

/GREGORY CLARK /GDC/
Examiner
Art Unit 1794

